Appendix 14

Letters to EPA Concerning Selection of 1998 Emissions Inventory

June 11, 2003

Ms. Brenda Johnson
Air Quality Modeling and Transportation Section
U. S. Environmental Protection Agency, Region 4
Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Re: Request to Use 1998 Emissions Data as Current Emissions Inventory

Dear Ms. Johnson,

This letter is a follow-up to a telephone conversation we had several weeks ago. At that time I mentioned that South Carolina would like permission to use 1998 emissions data for the most current year instead of 1999 data. We have two reasons for the request. The first is we think the 1998 emissions data is more representative and conservative. The second reason is all of our inventories were created before the EPA guidance calling for 1999 or later emissions data to be used was released. If we have to start over and recreate the inventories using 1999 data, we will most likely not be able to meet the deadlines for completion of the modeling, and we will face a tremendous financial cost. We have expended substantial resources to get to our current status. A change now would be a poor financial choice given the minimal benefit that using later data would provide.

The first issue concerns the change of emissions from 1998 to 1999. The following chart compares these two periods of time for NOx, VOC and CO:

Source	1998 NOx Emissions (tpd)	1999 NOx Emissions (tpd)	Difference (tpd)	Difference (%)
Point	463.3	410.3	-53.0	-11.44
Area	57.2	59.1	+1.9	+3.32
Non-road Mobile	159.7	145.7	-14.0	-8.77
On-road Mobile	344.0	~355.0[1]	+11.0	+3.2
TOTAL	1024.2	970.1	-54.1	-5.28

1- The on-road VMT increased by 2.8 % from 1998 to 1999. The number shown is an approximation based on the 3.2 % increase. SC used actual measured data from our state DOT to calculate the on-road emissions data. The data for on-road emissions in the 1999 NEI for SC was calculated by a contractor and differs (428.65 tpd) due to the method used to distribute the VMT data (actual measurements were not used). Please see the attachment for further discussion.

Source	1998 VOC Emissions (tpd)	1999 VOC Emissions (tpd)	Difference (tpd)	Difference (%)
Point	120.0	105.38	-14.62	-12.18
Area	769.0	451.91	-317.09	-41.23
Non-road Mobile	127.77	118.66	-9.11	-7.13
On-road Mobile	282.0	276.27	-5.73	-2.03
TOTAL	1298.77	952.22	-346.55	-26.68

As shown above, the emissions of NOx and VOC for our state actually decrease for 1999 when compared with 1998. For VOC the reduction is 26.7%, and for NOx the reduction is 5.3%. This means that the use of 1998 data would be more conservative for South Carolina, and we respectfully request to be able to use 1998 emissions data to satisfy EPA's current year requirements.

The second issue concerns both the time and money. The legislative process our State must go through requires us to complete our modeling work in a much shorter time frame than other states. In order to meet the EAC deadlines, our regulations and SIP must begin to take final shape by late summer 2003 so that they can go through our legislative process and receive final approval by our Board by early January of 2004 at the absolute latest. This means that we must have our sensitivity analysis and control strategy modeling runs completed by late summer to ensure we have chosen strategies that will allow us to be in attainment with the 8-hr ozone standard by 2007. Because of the tight schedule, our State went ahead and had the inventories for 2007, 2012 and 2017 created based on our 1998 episode emissions data before EPA released its guidance on EAC modeling. As stated earlier, if we have to start over and use 1999 emissions data, it would be very difficult for us to meet the deadlines we must achieve due to the legislative process we must follow. There would also be a significant additional cost associated with having to get our contractor to redo the inventory data based on 1999 data. We would have to get this work done by an outside contractor as we do not have the capabilities to do this work in-house at this point in time since our State has very limited prior experiences with ozone modeling. This extra burden and substantial financial cost makes little sense, especially since the emissions are actually higher in our state in1998 than they were in 1999.

Therefore, based on the issues raised above, South Carolina requests permission to use 1998 emissions data in lieu of 1999 data for the Early Action Compact ozone modeling that it is preparing to submit to the EPA. If you have any other questions or concerns about this request, please contact either John Hursey (803-898-4286) or Kevin Clark (803-898-4074). Thanks for your consideration.

Sincerely yours,

John E. Hursey
Division Director
Emissions, Modeling and Support Division
Bureau of Air Quality
South Carolina Department of Health & Environmental Control

ATTACHMENT

Summary of Why the 1998 Ozone Modeling Emissions for On-Road Mobile NOx Were Lower Than the 1999 NEI version 2 Emissions

When comparing S.C. 1999 NEI version 2 emissions data to the 1998 emissions generated by S.C. to be used for our Ozone Modeling, we found that the 1999 NEI data was almost 20% higher for On-Road Mobile daily NOx emissions. This seemed very high, especially compared to the little difference we were seeing from the other sources of NOx, and also from CO and VOC. We investigated further to see what might be causing this large difference. A sort of the On-road Mobile NOx emissions in the NEI data tables, revealed that some of our smaller population counties in the state were near the top for NOx emissions. We also noticed that most of the higher NOx emissions came from Light Duty Gas Vehicles (LDGV) on rural interstates. In analyzing the data further we discovered that the method used for allocating VMT to the county and road type levels was causing the differences in NOx emissions. The total annual statewide VMT used in the 1999 NEI and in the S.C.1998 Ozone Modeling Study are very similar, as the table below indicates:

	S.C. 98 Modeling Study		99 NEI Final version 2	
Annual Statewide VMT	42,912,269,922.0 miles		44,145,704,316.35 miles	
Avg Ozone Season Day VMT	114,530,939.6 miles		132,470,242.9 miles	
Month of Ozone Season Analysis	May		July	
OSD Temps used in input files	Low- 65	High- 91	Low-72.1	High- 91.2

South Carolina used 1998 annual VMT by county and road type, collected by our S.C. Dept. of Transportation (SCDOT). These numbers are based on actual road studies by the SCDOT. The 1999 NEI VMT starts out with SCDOT annual VMT, which is reported to the Federal Highway Administration (FHWA) who enters the data in the Highway Performance Management System (HPMS). EPA takes this annual number and allocates it temporally by county and road type, using different allocation factors. According to Laurel Driver, of the USEPA-OAQPS, the contractor allocated the VMT data to Rural Interstates using the actual miles of Rural Interstate in each county. Distributing the VMT in this manner resulted in more VMT being put on rural interstates than what the actual road count data indicated in 1998. Rural Interstates typically have a higher emission factor than the other road types because of the high speeds. We feel that this explains much of the difference we were seeing in the two years' emissions. In summary, the 1998 on-road mobile emissions were calculated using actual 1998 VMT and the 1999 NEI v.2 on-road mobile emissions were calculated with VMT data generated by the use of multiple allocation factors. We feel that using actual VMT data is more representative than using VMT developed by allocation factors.

July 11, 2003

Kay T. Prince, Chief
Air Planning Branch
US Environmental Protection Agency
Region 4
Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Dear Ms. Prince:

In a letter to the United States Environmental Protection Agency (EPA) Region 4 dated June 11, 2003, the South Carolina Department of Health and Environmental Control (DHEC) requested to use 1998 emissions data as current year emissions for the attainment demonstration for the early action compacts (EAC) in South Carolina. In response, we received a letter dated June 20, 2003 from EPA Region 4. This letter highlights a large discrepancy between DHEC's 1998 emission inventory and the 1999 National Emissions Inventory (NEI) in the volatile organic compounds (VOC) totals for area sources. The 1998 area source emissions were 769 tons per day (tpd) of total hydrocarbons (THC) versus 451.91 tpd VOC in 1999. This gives a discrepancy of 317.09 tpd. This June letter requested that this discrepancy be addressed and any errors, either in the 1998 or the 1999 inventory, be identified. DHEC has examined the inventories closely and has determined that there is no error in the 1999 NEI inventory. Some things were discovered, with respect to the 1998 inventory, that greatly reduced the discrepancy between the two inventories, and we feel that both inventories are sound.

The first step in our analysis of the inventories involved contacting the contractor, SAI, to get their input on why there may be such a big difference in the two inventories. They indicated to us that the 769 tpd THC value from the 1998 inventory, which they generated, represents an average weekday's emissions. They provided a separate value of 670 tpd THC as an average daily emission for the entire episode (this includes weekday, Saturday, and Sunday emission estimates). We were not initially provided this 670 tpd value and did not realize the 769 tpd value represented only a weekday average. In comparing values to the 1999 NEI, it would be more accurate to compare the average daily value of 670 tpd. If we compare our 1998 THC value of 670 tpd to the 1999 NEI's 451.91 tpd VOC, we then saw a discrepancy of 218.09 tpd.

We continued our analysis by reviewing our 1998 inventory more closely and seeing where there are major differences, by Source Classification Code (SCC), between our 1998 and the 1999 NEI. The biggest difference we saw between the two was the presence of SCC 2104008001 (Wood Combustion- Fireplaces) in our 1998 inventory, with 157 tpd THC. Emissions for this SCC were 0.0 tpd in the 1999 NEI ozone season day inventory. Because the 1998 inventory represents an episode in the ozone season, and the temperatures are not typically low enough that fireplaces or other

forms of household heating would be required, this emission source should not have been included in the inventory. If you subtract the 157 tpd THC emissions associated with fireplaces from the average daily 1998 episode emission value of 670 tpd, it leaves a 1998 inventory value of 513 tpd. As you can see, this 1998 value is more in line with the 451.91 tpd VOC emissions in the 1999 NEI. There is now a discrepancy of only 61.09 tpd.

Although the discrepancy between the two inventories is now very low, we also recognize that there would be additional adjustments to the 1998 inventory because of temporal corrections and THC conversions that take place in the EPS 2.5 preprocessor. It would be difficult for us to quantify what difference these corrections may make to our current 1998 inventory, but converting the THC emissions back to VOC emissions would definitely lower the value to some degree.

At this point, we feel satisfied that we have found the major causes of the discrepancies we were seeing between DHEC's 98 inventory and the 1999 NEI, and are confident that the 1999 NEI has no major flaws that would cause difficulties to other parties that choose to use that data for their own modeling. We also feel confident that the 1998 inventory, which we are currently using for our attainment demonstrations, is more representative of emissions during our episode than the 1999 NEI. The presence of the fireplace emissions in the 1998 inventory is an error, but because those emissions are scattered evenly across the state we do not feel they will adversely affect the modeling. In fact, because the presence of fireplaces increases the THC emissions, our 1998 inventory represents a more "worst case" scenario. We do not plan to re-do the inventory or modeling runs to correct this error.

We hope this answers your concerns and we once again request permission to use the 1998 inventory prepared for our episode to represent "current year" emissions for our attainment demonstration instead of using 1999 emissions data. If you have any additional questions, please feel free to contact me (803) 898-4286.

Sincerely yours,

John E. Hursey, Director
Emissions, Modeling and Support Division
Bureau of Air Quality
South Carolina Department of Health and Environmental Control